

DETAILED ACTION

Response to Amendments

Claims 1-25 have been cancelled.
Claims 26, 27, 32, 38, 44 and 45 have been amended.

Claims 26-49 are pending.

Response to Arguments

I. Applicant's arguments with respect to claims 1-25 have been considered but are not persuasive.

A. With respect to independent claim 26, Applicant argues that the *Hunter et al* reference fails to teach the claimed limitation of "searching the data for an iterative search result using a subsequent key comprising the subtree index found in a preceding search and at least a next portion of the first key".

Examiner respectfully disagrees. *Hunter et al* specifically teaches a search is started with an initial hash index based upon the whole address "while indices for subsequent search iterations are based upon a portion of the address remaining after applying progressively shorter masks each iteration" (*col.7 lines 56-66*); outputting the hash index/indices to the memory and using matching logic to compare search keys with forwarding database entries retrieved from the memory (*col.8 lines 16-24, col.9 lines 5-13*). Thus it is obvious that each iteration of a search is based on previous masks search results of the preceding index and a new shortened hash index based on another portion of the address. Applicant's arguments (see Remarks page 9) that *Hunter et al's* searching technique is "not dependent upon results of a memory access" (stated in *Hunter et al: col.8 lines 8-11*) is immaterial to the relevancy of *Hunter et al's* disclosure when

compared to the claim language. Applicant's claim does not preclude or include the feature of using results of a memory access. The claim language states using "a subsequent key comprising the subtree index found in a preceding search". Nowhere in the claim language does it state that the subtree index or preceding search is a result acquired or found as a result of a memory access. Applicant's arguments are therefore unpersuasive and the rejection under the prior art is maintained.

B. In the Examiner-Initiated interviews with Applicant from 9/9/09-9/15/09, Examiner indicated the possible allowability of claim 27. Examiner however withdraws this assertion in light of further consideration and analysis of the cited prior art, *Hunter et al.*

Claim 27 states "The method of claim 26 further comprising: searching the data for a second initial search result using at least a first portion of a second key, wherein the step of searching the data for the second initial search is performed in parallel with the step of searching the data for the iterative search result". *Hunter et al* teach that the hash index thread and the search thread are "performed in parallel" (*col.9 lines 17-33*), which enables the generation of a new hash index while the search is being performed. The rejections under the prior art are therefore maintained.

Claim Rejections - 35 USC § 102

II. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for

patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

III. Claims 26-28, 30-34, 36-40 and 42-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Hunter et al (US 6,877,005).

a. **Per claim 26**, *Hunter et al* teach a method comprising:

- searching data stored in a computer readable media for a first initial search result using at least a first portion of a first key (*col.6 line 60-col.7 line 2*); and
- if the first initial search result is a route index corresponding to the first key, then returning the route index (*col.7 lines 3-10, col.10 lines 8-52—corresponding route index for each search key*); and
- if the first initial search result is a subtree index for an iterative search, then performing an iterative search of the data stored in the computer readable media, the iterative search comprising: searching the data for an iterative search result using a subsequent key comprising the subtree index found in a preceding search and at least a next portion of the first key (*col.7 line 56-col.8 line 24, col.10 lines 60-67—search iterations using search key with a route and hash index*); and
- if the iterative search result is a route index corresponding to the first key, then returning the route index; and if the iterative search result is a subtree index for a next search, then performing the iterative search again (*col.8 lines 4-11 and 42-65, col.10 lines 8-37—hash index generated for each new search and iteration*).

b. **Claims 32, 38 and 44** contain limitations that are substantially equivalent to claim 26 and are therefore rejected under the same basis.

c. **Per claim 27**, *Hunter et al* teach the method of claim 26 further comprising: searching the data for a second initial search result using at least a first portion of a second key, wherein the step of searching the data for the second initial search result is performed in parallel with the step of searching the data for the iterative search result (*col.10 lines 8-52*).

d. **Per claim 28**, *Hunter et al* teach the method of claim 27 wherein the first and/or second keys comprise at least one of either a 32 bit IPv4 address or a 128 bit IPv6 address (*col.4 lines 31-37*).

e. **Claims 34, 40 and 46** are substantially equivalent to claim 28 and are therefore rejected under the same basis.

f. **Per claim 30**, *Hunter et al* teach the method of claim 26 wherein the data is stored in a lookup table (*col.3 line 67-col.4 line 6, col.7 lines 37-54*).

g. **Claims 36, 42 and 48** are substantially equivalent to claim 30 and are therefore rejected under the same basis.

h. **Per claim 31**, *Hunter et al* teach the method of claim 30 wherein the subtree index comprises a pointer to at least one other entry stored in the lookup table (*col.3 line 67-col.4 line 6, col.7 lines 37-54, col.9 lines 30-33*).

i. **Claims 37, 43 and 49** are substantially equivalent to claim 31 and are therefore rejected under the same basis.

j. **Per claim 33**, *Hunter et al* teach the apparatus of claim 32 further comprising: a controller configured to enable parallel processing of at least (i) searching the data for a second initial search result using at least a first portion of a second key, and (ii) searching the data for an iterative search result based on a subsequent key comprising the subtree index found in a preceding search and at least a next portion of the first key (*col.8 lines 4-11 and 42-65, col.10 lines 8-52*).

k. **Claims 38 and 45** are substantially equivalent to claim 33 and are therefore rejected under the same basis.

Claim Rejections - 35 USC § 103

IV. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

V. **Claims 29, 35 and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Hunter et al* (US 6,877,005) in view of *Holender* (US 5,727,051).

a. **Per claims 29**, *Hunter et al* teach the method of claim 27, yet fail to explicitly teach wherein the first and/or second keys further comprise a prefix corresponding to a Virtual Private Network identifier. However, *Holender* teaches using the virtual network identifiers when performing iterative searches for routing information (col.6 lines 59-64, col.14 lines 5-9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Hunter et al* and *Holender* for the purpose of extending the searching capabilities to virtual network and address located on a VPN.

b. **Claims 35 and 41** are substantially equivalent to claim 29 and are therefore rejected under the same basis.

Conclusion

VI. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure: Frank (6754799), Masten et al (3716840), Tzeng (6067574), Ahuja et al (5946679), Brown (6836771).

VII. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

VIII. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KRISTIE D. SHINGLES whose telephone number is 571-272-3888. The examiner can normally be reached on Monday 9:00am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Vaughn can be reached on 571-272-3922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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/KDS/

/William C. Vaughn, Jr./

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